III. REMARKS

A. Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 3, 8, 16 and 29–31 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. With respect to claims 3, 8, 29 and 30, the rejection is based on the lack of sufficient antecedent basis for the limitation "benzyl alcohol." With respect to claim 16, the rejection is based on insufficient antecedent basis for the limitation "water." Applicant has amended claim 3, 16 and 29–31 to provide antecedent basis for the referenced limitation. With respect to claim 8, Applicant believes that there is antecedent basis for the limitation "benzyl alcohol," provided in claim 4, upon which claim 8 depends.

For the reasons set forth above, Applicant asks that the Examiner withdraw the rejections of claims 3, 8, 16 and 29–31 under 35 U.S.C. §112, second paragraph.

B. Rejection Under 35 U.S.C. §103

Claims 1–6, 8–13, 15–19 and 22–31 are rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 5,569,461 to Andrews ("Andrews"), in view of United States Patent No. 6,608,102 to Howell et al. ("Howell et al."), Varga, J. (Derwent ACC-NO 1976-72203X (*see* Abstract) ("Varga Abstract"), United States Patent No. 4,110,430 to Hopp et al. ("Hopp et al."), United States Patent No. 6,033,705 to Isaacs ("Isaacs") and United States Patent No. 6,284,259 to Beerse et al. ("Beerse et al.").

1. Examiner's Reasons in Support of the Rejection

The Examiner's reasons in support of the rejection are as follows:

> [Applicant] claims a method for disinfection of air to reduce the concentration of germs comprising the distributing or atomizing of an antimicrobial composition wherein the antimicrobial composition is free from ethanol and isopropanol and wherein the antimicrobial composition comprises propylene glycol, tannins, lactic acid, benzyl alcohol and further comprises hydrocinnamic alcohol, additional GRAS flavoring agents such as essential oils (*see*, *e.g.* claim 10) and an emulsifier (*see*, *e.g.* claim 17).
>
> Andrews teaches an antimicrobial composition comprising propylene glycol and lactic acid for disinfecting. Andrews does not teach the other claimed active ingredient such as tannins, a benzyl alcohol, a hydrocinnamic alcohol, additional GRAS flavoring agents such as essential oils and an emulsifier contained within its antimicrobial composition.
>
> Howell et al. beneficially teach (*see*, *e.g.*, contained with its patent, "Other Reference Publications," Scalbert et al.) tannins to have antimicrobial properties.
>
> Varga J beneficially [teaches] (*see*, *e.g.* abstract) a benzyl alcohol to have antimicrobial and/or antibacterial properties.
>
> Hopp et al. beneficially teach (*see*, *e.g.*, column 1, lines 21–29 and lines 60–65) a hydrocinnamic alcohol to have antimicrobial and/or antibacterial properties.
>
> Isaacs beneficially [teaches] (*see*, *e.g.*, column 10, lines 23–29) an emulsifier may be added to a compound to enhance its antimicrobial effect.
>
> Beerse et al. beneficially teach (*see*, *e.g.* column 9, lines 19–39) essential oils to have antimicrobial and/or antibacterial properties.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Andrews' antimicrobial composition to include the other claimed active ingredients beneficially taught by Howell, Varga J, Hopp, Isaacs and Beerse because the combined above references would create an improved claimed antimicrobial composition wherein the improved claimed composition would intrinsically disinfect the air when reducing the concentration of microbial and/or bacteria germs within the air. Furthermore, the adjustment of other conventional working conditions (*e.g.* the claimed concentrations of the antimicrobial composition within the air, the type of antimicrobial system and/or spray design and the substitution of known bacterial for one another to be treated and/or reduced), is deemed merely a matter of judicious selection

> and routine optimization which is well within the purview of the skilled artisan.
>
> Accordingly, the claimed invention was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, especially in the absence of evidence to the contrary.

(Action, page 3, line 23 to page 5, line 10).

2. Comparison of Claimed Invention and Prior Art

Independent claims 1 and 22 are directed to a method for the disinfection of air comprising the distributing or atomizing of an antimicrobial composition that can be added to the air to achieve a dosage of from 0.001 to 1 ml per cubic meter of air per hour. The claims also are directed to the achievement of a permanent concentration of from 5 to 10 ptb (parts per billion) of the antimicrobial composition in the air. The antimicrobial composition is free from ethanol and isopropanol and comprises propylene glycol, tannins and lactic acid. Independent claims 23, 25 and 27 are also directed to the above-referenced method, except that disinfection of air is further defined as reducing the concentration of germs selected from gram-positive bacteria, gram-negative bacteria, molds, spore-formers, viruses, bacillus subtilis, pseudomona fluorescens, staphylococcus aureus, aspergillus niger, hepatitis B and bactillis anthracis. The remaining claims 2–6, 8–13, 15–19, 24, 26 and 28–31 are dependent upon the above-referenced independent claims or are dependent upon a claim that in turn is dependent upon one of the above-referenced independent claims.

Accordingly, Applicant's claimed method utilizes an antimicrobial composition in extremely low concentrations in air, namely, 5 to 10 parts per billion. None of the prior art references relied on by the Examiner discloses, exemplifies or even suggests to one of ordinary skill in the art a method using antimicrobial compositions in such low concentrations.

Andrews is directed to antimicrobial systems comprising certain propylene glycol mono fatty acid esters in combination with both acidic chelating agents and edible saturated fatty acids in the presence of a propylene glycol vehicle. (Column 2, lines 12–20). Andrews does not exemplify or otherwise disclose to one of ordinary skill in the art the concentrations in air in which the Andrews antimicrobial systems should be employed.

Howell et al. is directed to proanthocyanidin extracts substantially free of anthocyanins and flavonols. ***The extracts are also shown to be free of hydrolyzable tannins***, alkanoids, lipids, carbohydrates, simple sugars, protein and amino acids, alcohols and organic acids. (Column 3, lines 19–23) (*emphasis added*). Accordingly, Andrews discloses a composition not containing tannins. With that disclosure in mind, Applicant respectfully disagree with the Examiner's contention that Howell et al. "beneficially" (or affirmatively) "teach . . . tannins to have antimicrobial properties" when Howell et al. specifically discloses that the extract of the invention is free of hydrolyzable tannin. In other words, the Howell et al. disclosure of compositions free of tannin would lead one skilled in the art to avoid using tannins in a composition and ignore the title of the Scalbert article entitled "Antimicrobial Properties of Tannins." In addition, Howell et al. does not disclose antimicrobial compositions that are intended to be present in the very low concentrations in air that are set forth in Applicant's claims.

The Varga Abstract discloses treatment of the surface of a doormat with the combination of methylparaban, propylparaban and benzyl alcohol to disinfect it and destroy bacteria, fungi, and viruses deposited on the mat. It appears that the Varga composition is in liquid form and is not intended to be present in the air. Varga does not disclose any concentrations in the air at which the Varga composition is intended to exist, let alone the concentrations of antimicrobial composition in the air set forth in Applicant's claimed method.

Hopp et al. is directed to a germ-inhibiting, microbicidal or deodorizing composition comprising p–isopropyl–and/or p–tert.butyl–alpha–methyl hydrocinnamic alcohol, together with a carrier or dilutant (Abstract). The Hopp et al. composition appears to be in the form of a liquid or spray. Hopp et al. discloses that "the germ-inhibiting microbicidal properties of the hydrocinnamic alcohols to be used according to the invention become apparent when these compounds are applied in an amount of at least 0.001 mg per cm^2 of skin. (Column 1 lines 61–64). Such concentrations appear to be several orders of magnitude greater than the concentration of antimicrobial composition in air set forth in Applicant's claimed method. No other concentrations of the composition are disclosed.

The final two references, Isaacs and Beerse et al. relate to treatments of a surface with an antimicrobial liquid. Isaacs is directed to a process for inhibiting microbial growth on a surface of an edible foodstuff, which comprises applying to the surface a defined

compound selected from a group consisting of certain fatty acids and derivatives of fatty acids and fatty alcohols (Abstract). Beerse et al. relates to an antimicrobial wipe comprising a porous or absorbent sheet impregnated with an antimicrobial cleansing composition, wherein the antimicrobial cleansing composition comprises from about 0.001% to about 5.0% by weight of the antimicrobial cleansing composition of an antimicrobial active. Neither Isaacs nor Beerse et al. discloses a method which involves the achievement of a concentration in air of from 5 to 10 parts per billion of the antimicrobial composition.

Accordingly, for the reasons set forth above, one skilled in the art cannot derive from the combination of references relied on by the Examiner how to obtain Applicant's claimed method. Nor are the limitations as to air concentration in Applicant's claimed method merely a matter of judicious selection and routine observation which is well within the purview of the skilled artisan. Instead, the discovery of an antimicrobial composition that can be employed at the very low concentration levels set forth in Applicant's claims is itself patentable absent the disclosure of that feature of the invention in the art. Accordingly, the rejection of claims 1–6, 8–13, 15–19 and 22–31 under 35 U.S.C. §103 is untenable and should be withdrawn for the reasons set forth above.

IV. Conclusion

It is believed that the above Amendment and Remarks constitute a complete response under 37 CFR §1.111 and that all bases of rejection in the Examiner's Action have been adequately rebutted or overcome. A Notice of Allowance in the next Office Action is, therefore, respectfully requested. The Examiner is requested to telephone the undersigned attorney if any matter that can be expected to be resolved in a telephone interview is believed to impede the allowance of pending claims 1–6, 8–13, 15–19 and 22–31 of United States Patent Application Serial No. 10/019,240.

Respectfully submitted,

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